(Example NPEP Success Story)

ABC Rope Manufacturing Eliminates 27,000 Pounds of Lead, Saves $50,000 Annually

ABC Rope Manufacturing, founded in May, 2000, in Waywright, Ohio, has over 350 employees producing high carbon rope wire and trade wire products. We use the wire to fabricate many grades and constructions of wire rope from 1/4" through 7" diameter to serve mining, elevator, structural, and general purpose markets throughout the world. We produce 16,000 tons of wire and wire rope annually.

ABC Rope's NPEP Goal

ABC joined NPEP in March, 2004 and set an NPEP goal to eliminate lead from our manufacturing process by the end of the year. The traditional method used to produce high quality rope wire is the double lead patenting process. Our goal targeted lead drag out from heat baths, which resulted in polluted acid bath, rinse waters, and air. Employees had to be tested for blood lead levels and lead contaminated the waste acid and drawing compounds from the final process.

Source Reduction, Recycling, and Recovery Alternatives Considered

Prior to the decision to eliminate lead, we converted one patenting line to a direct fired furnace with air blast cooling, but this line only produced wire in larger sizes. We also investigated fluid bed quench systems, but found that converting to this method was not economical.

The alternative chosen was a combination of technologies using as much available equipment as possible. We used the direct fired furnace line and replaced an inadequate air blast system with a molten salt bath to provide the low temperature quench. We had to modify the furnace to make it more air tight and adjust the burner system to provide a rich gas atmosphere to keep the high temperature wire from scaling. We replaced the air blaster with an existing salt bath using an under fired design of the lead quench and redesigned other support equipment, such as a transfer hood to keep the wire from scaling and a salt rinse system (to extend acid life) that removes salt before the wire enters the cleaning tank.

Hurdles Faced

One major hurdle was operator acceptance and training. The new system was hotter at the quench tank area and it took some time for the operators to adjust to working in this area. Salt was lighter than lead, posing a splash hazard. And, the quench tank had to be cleaned regularly, which was not previously the case.

Our biggest hurdle came several months into operation when the under fired quench tank failed and shut down the line. The short life of the tank was determined to be caused by the under fired heating system. We quickly redesigned the quench tank to be deeper and to have a new immersion burner system inside the tank. We also improved our furnace burner system, our transfer hood, and the hot wear materials.

Waste Minimization Results

As a result of changes, the amount of scale produced was reduced to about a third of the previous quantity and we met our goal of eliminating lead processing, eliminating 27,000 pounds of lead annually. The recycling of more than 80,000 pounds of lead used in the old process also helped fund the project. The new process further reduced our acid disposal costs as cleaner acid can be reused instead of being disposed. We have avoided maintenance costs in excess of $50,000 annually and provided a cleaner, healthier environment for our employees. The economic payback on this project was less than two years.

Lessons Learned

Making a change of this magnitude in a company is not easy and the unanticipated problems that occur are stressful. Build a team of people dedicated to making the change work and keep them involved in the process. Persistence is the most important factor in achieving your goal.